

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION FOR PATENT

FOR

ARCHERY BOW STAND

Inventor/Applicant: Charles E. Horn  
Inventor's Address: 6001 Charter Oak Lane SE  
Cedar Rapids, IA 52403  
Citizenship: U.S.A.

Attorney of Record: Allan L. Harms, Reg. No. 27558  
Correspondence Address: 2750 First Avenue N.E., Suite 420  
Cedar Rapids, IA 52402

"Express Mail" mailing label number: EV 090762595 US

Date of Deposit: January 8, 2004

I hereby certify that this paper or fee is being deposited with the United States Postal Service "Express Mail Post Office to Addressee" service under 37 CFR 1.10 on the date indicated above and is addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231.

Allan L. Harms; Reg. No. 27,558

A handwritten signature in black ink, appearing to read "Allan L. Harms", is written over a horizontal line.

## ARCHERY BOW STAND

## STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT

Not Applicable.

## BACKGROUND OF THE INVENTION

In modern archery, compound bows are used which include a central handle section known as a riser, and limbs which extend from the upper and lower ends of the riser. The limbs are adjustable upon the ends of the risers by the tightening or loosening of fasteners mounting the limbs to the riser. The bowstring is strung between pulleys on the limbs. In hunting, target, archery, etc. the archer finds frequent occasions to set his or her bow down including while retrieving arrows from the target. Historically, archers have merely laid their bows on the floor or ground surface with the handle and limbs resting on the floor or ground which can scuff or mar the surfaces of the bow components and may result in dirt or sand coming in contact with the string pulley components. Laying the bow on the ground or floor increases the risk of misaligning the sight and of course, the bow could be accidentally trampled on. Obviously it would be preferable not to lay a precision, fine tuned compound bow on the ground. If an upright wall or other structure is nearby, the archer may set the bow on the ground or floor surface and lean the upper end of the bow against the upright structure with the lower string pulley resting on the ground or floor, increasing the likelihood of damage and wear to the lower pulley, with the concomitant risk that the bow will not be stable and will fall over.

A few devices have been developed to hold an archery bow so that it need not be laid on the ground or rested on its lower members. In one device, a weighted base has an upstanding post mounted to it, with a hook arrangement positioned on the post on which the bow may be suspended so that it does not touch the ground. Exemplary of such a device is the ARCHERY STAND-BY bow stand marketed by Wildwood Innovations, Inc. of Ashland, Wisconsin. This type of device adds a somewhat heavy piece of equipment to be carried to the shooting location.

Another bow holding device includes a clamp member which grasps the lower limb of the

1 bow. This device cannot be left on the bow when shooting because its mass interferes with the  
2 action of the limb and therefore the accuracy of the shot. In addition, the clamping action tends to  
3 chafe the surface finish of the bow limb, thereby reducing the value of the bow. What is needed is  
4 a low mass attachment for a bow which can provide a support for the bow which prevents the bow  
5 from touching the ground or floor when rested and which can be left on the bow while shooting  
6 without affecting the physical characteristics of the bow.

#### 7 BRIEF SUMMARY OF THE INVENTION

8 The present invention is a bow stand attachment for a compound bow. The bow stand  
9 attachment attaches to the riser or limb bolt rather than the limb, and is of low mass. In one  
10 embodiment, a conical base member is substituted for the conical washer used in coupling the  
11 lower limb of the bow to the bow handle. The base member includes two short protruding  
12 elements which depend forward from the base member at approximately thirty degrees and are  
13 separated by about forty degrees. Easily removable extending legs are slid onto each protruding  
14 element to serve as two legs of a tripod. If the bow has a stabilizer, the end of the stabilizer will  
15 serve as the third leg. If the bow has no stabilizer, the bow will rest on the ends of the legs and on  
16 the lower pulley wheel. Though the legs of the bow stand invention are intended to be removed  
17 when shooting, the bow may be used without removing the bow stand legs because their mass is  
18 small and evenly distributed on the bow and because the bow stand attachment does not attach to  
19 the lower limb of the bow. Consequently the legs do not substantially affect the physics of the  
20 bow when it is used. In practice, the user will remove the legs from the base member when  
21 shooting because the legs may be quickly and easily reattached to the base member.

22 It is therefore an object of the invention to provide a bow stand attachment which may  
23 remain on the bow without affecting the performance of the bow while it is being used. It is a  
24 further object of the invention to provide a bow stand with legs which can be quickly and easily  
25 removed and reattached as needed. It is also an object of the invention to provide a bow stand  
26 which has a base member which can remain on the bow so that the bow may be transported in its

1 usual carrying case. It is also an object of the invention to provide a bow stand which mounts to  
2 the riser of the bow and does not affect the operation of the bow limbs. It is a further object of the  
3 invention to provide a bow stand which will not mar the external surface of the bow or its limbs.

4 These and other objects of the invention will become apparent from examination of the  
5 description and claims which follow.

#### 6 BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING(S)

7 FIG. 1 is a perspective of a compound bow supported on a surface by the invention bow  
8 stand in cooperation with a stabilizer.

9 FIG. 2 is a close up view in perspective of the invention mounted to a compound bow,  
10 with parts of the invention and the bow cut away, and with a mounting fastener exploded from the  
11 invention and bow.

12 FIG. 3 is a front elevation of the bow stand of the present invention.

13 FIG. 4 is a front perspective of the bow stand of the present invention shown with one leg  
14 of the invention separated from the base member of the invention.

15 FIG. 5 is a side plan view of the bow stand invention.

16 FIG. 6 is a front perspective of the base element of a first alternate embodiment of the  
17 invention.

18 FIG. 7 is a front perspective of a bow equipped with a second alternate embodiment of the  
19 invention.

20 FIG. 8 is a front elevation of the base element of the second alternate embodiment of the  
21 invention.

#### 22 DETAILED DESCRIPTION OF THE INVENTION

23 Throughout this description, like elements are identified with the same reference numerals.

24 Figure 1 illustrates a compound bow 3 resting on surface 23 supported on the free end 15  
25 of a stabilizer 5 and on the invention 2 which has been mounted to bow 3. Bow 3 comprises a  
26 handle or riser 7 with an upper limb 9 and a lower limb 11 mounted thereto at its opposing ends.

1 A conical washer 25 provides an adjustable connection for upper limb 9 to riser 7. Bow 3 includes  
2 a bowstring 13 which is strung between upper pulley 17 and lower pulley 19. Stabilizer 5 is a  
3 linear rod which is mounted to bow 3 below grip 21 and is a well known accessory for a target  
4 bow. Invention 2 comprises legs 4, 6 having free ends 24, 26 respectively which with free end 15  
5 of stabilizer 5 define a plane. Legs 4, 6 cooperate with stabilizer 5 to form a tripod to support bow  
6 3 on floor surface 23 such that lower limb 11 and lower pulley 19 do not rest on floor surface 23.  
7 Critical to the effectiveness of invention 2 is its attachment to the riser 7 and not to lower limb 11.  
8 If bow 3 had no stabilizer attachment, bow 3 would instead rest on legs 4, 6 and on lower pulley  
9 19.

10 Referring now to Figure 2, invention 2 is shown with parts of its legs 4, 6 cut away. In  
11 the preferred embodiment illustration in Figure 2 invention 2 mounts to riser 7 by bolt 10 where  
12 lower limb 11 is fastened to riser 7. Invention 2 comprises a base 8 which replaces a typical  
13 conical washer such as conical washer 25 (Figure 1) which retains upper limb 9 to riser 7. Bolt 10  
14 passes through base 8 and through first end 27 of lower limb 11 and is secured into lower end 29  
15 of riser 7. Bolt 10 may be selectively tightened to compress base 8 into a recess in lower limb 11  
16 to adjust the angle of lower limb 11 relative to riser 7 under tension created by bowstring 13.

17 Referring now also to Figures 3-5, details of the structure of invention 2 can better be seen.  
18 Base 8 of invention 2 includes a central axial opening 12 within bowl 36, for passing the bolt 10  
19 therethrough and into lower end 29 of riser 7.

20 Base 8 comprises an outer rim 18 to which legs 4 and 6 are mounted. Each of legs 4, 6 are  
21 longitudinally slidably receivable on stubs 14, 16 which are secured to outer rim 18 of base 8.  
22 Each stub 14, 16 depends from rim 18 and is provided with resilient O-rings 20, 22 with first O-  
23 ring 20 spaced apart from rim 18 and second O-ring 22 spaced a short distance from free end 24 of  
24 stub 14. O-rings 20, 22 provide sliding resistance to the interiors of legs 4, 6. O-rings 20, 22 are  
25 received in annular grooves in the conventional manner.

26 Each leg 4, 6 is preferably a hollow elongate barrel having a diameter of approximately .40

1 inch and a sidewall thickness of approximately .013 inch. Legs 4, 6 are preferably identical and  
2 interchangeable. Legs 4, 6 are preferably very low in mass and aluminum is a satisfactory material  
3 to use. Lengths of aluminum arrow shaft stock satisfy the requirements for legs 4, 6. A bushing  
4 42 is installed in receiving ends 44, 46 of each leg 4, 6 to provide a friction fit of legs 4, 6 on O-  
5 rings 22, 20. It is found that stubs 14, 16 may be preferably one-half inch to two inches in length  
6 while legs 4, 6 are preferably 6-10 inches in length. Each leg 4, 6 may include a resilient end cap  
7 26 on the lower free ends 24, 26 of legs 4, 6 respectively.

8 Stubs 14, 16 and therefore legs 4, 6 are separated by angle A which may be from twenty to  
9 sixty degrees and preferably is approximately forty degrees such that invention 2 provides a stable  
10 support when cooperating with a stabilizer as a tripod. Preferably the length of each leg 4, 6 is  
11 approximately ten inches but may be varied.

12 From Figure 5, it can be seen that legs 4, 6 preferably extend forward of outer end 32 of  
13 base 8 at angle B which is preferably about thirty degrees. Therefore legs 4, 6 define an angle of  
14 approximately sixty degrees with the central axis of bowl 36 of base 8. For ease of manufacture,  
15 legs 4, 6 extend perpendicularly from outer rim 18, so, of necessity outer rim 18 must be oriented  
16 at approximately thirty degrees from the axis of central opening 12 of base 8. Inner chamfer 34 is  
17 machined at about forty five degrees to provide a conical outer shape for base 8.

18 When base 8 is located on lower limb 11 after the provided conical washer is removed,  
19 base 8 is best oriented such that stubs 14, 16 are symmetrical on the riser 7 of bow 3. Base 8 need  
20 not be removed from bow 3 when it is stored in a case because legs 4, 6 are easily removable from  
21 stubs 14, 16 and legs 4, 6 may be stored conveniently in an arrow storage area or other  
22 compartment of a bow case. While shooting the bow 3, legs 4, 6 may be quickly removed and  
23 stored in the user's quiver or pocket until legs 4, 6 are returned to stubs 14, 16 when the bow 3 is  
24 to be set down. In addition, legs 4 and 6 can be removed when bow 3 is to be used but, because  
25 of their low mass and symmetric orientation on the riser 7 of bow 3, their presence will not  
26 negatively affect aiming of the bow 3.

1           Because free ends 24, 26 of legs 4, 6 respectively and free end 15 of stabilizer 5 define a  
2 plane, invention 2 is useful to support bow 3 on generally horizontal surfaces with stabilizers of  
3 varying lengths. For example, if a short stabilizer were attached to bow 3, the bow would rest on  
4 the free end of the stabilizer and on each leg 4, 6 though the bow would be tipped further forward  
5 than illustrated in Figure 1.

6           Figure 6 discloses an alternative embodiment base element 58 which is in the nature of a  
7 cap or cover for a limb washer similar to conical washer 25 of bow 3 shown in Figure 1 or such as  
8 limb washer 33 seen in Figure 7 which adjustingly retains lower limb 11 to lower end 29 of riser  
9 7. Base element 58 is sized to overlie limb washer 33 and be removably attached thereto by use of  
10 set screws 60. Base element 58 comprises a peripheral sidewall 62 from which posts 74, 76  
11 depend. Posts 74, 76 are preferably equivalent to stubs 14, 16 of the preferred embodiment of  
12 Figure 4, and legs 104 and 106 may be longitudinally slidingly received upon posts 74, 76 in like  
13 manner to the sliding attachment of legs 4, 6 to stubs 14, 16 of the preferred embodiment of  
14 invention 2.

15           Figure 7 discloses an alternate embodiment bow stand 102 mounted to riser 7 of a bow 3  
16 which includes the same structural elements as bow 3 illustrated in Figure 1. Bow stand 102  
17 includes mounting element 108 which is mounted to a threaded bore 31 of riser 7 (see Figure 2)  
18 which is available on many compound bows like bow 3. Mounting element 108 may comprise an  
19 elongate centrally threaded shaft 112 such as is illustrated in Figure 8 or it may be a pair of short  
20 posts with threaded ends which are screwed into riser 7 from opposing ends of the threaded bore  
21 31 or it might be a pair of posts which are inserted from opposing sides of the riser 7 and bolted  
22 together by a screw coupling.

23           In the alternate embodiment of Figures 7, 8, the mounting element 108 has central threads  
24 110 on elongate shaft 112 for engagement with threads within threaded bore 31. Opposing ends  
25 124, 126 of mounting element 108 remain exterior of riser 7 on its opposing sides when central  
26 threaded portion 110 is engaged with threaded bore 31. Fixed preferably at perpendiculars to ends

1 124, 126 are posts 114 and 116 which extend from ends 124, 126 substantially transversely to the  
2 longitudinal axis of mounting element 108. Each stub 114, 116 may include annular O-rings 120  
3 therealong which assist in frictionally retaining legs 104, 106 in sliding engagement upon stubs  
4 114, 116. Legs 104, 106 may be of identical construction to legs 4, 6 of the preferred embodiment  
5 of Figures 1-5, though legs 104, 106 may be longer or shorter depending on the location of  
6 threaded bore 31 on riser 7. Mounting element 108 may be installed in threaded bore 31 and then  
7 legs 104, 106 may be slid onto stubs 114, 116 on which the bow 3 may be rested, with legs 104,  
8 106 providing two legs of a tripod and the stabilizer 5 making the third leg. It should be  
9 understood that legs 104, 106 may be quickly and easily slid onto stubs 114, 116 when the bow 3  
10 is to be rested on a surface and legs 104, 106 may be removed quickly and easily when the bow 3  
11 is to be shot. However, due to their low mass which is preferably less than one-half ounce each,  
12 and their attachment to riser 7, legs 114, 116 will not influence the balance and physical operation  
13 of bow 3.

14 The foregoing description of the invention has been presented for purposes of illustration  
15 and description and is not intended to be exhaustive or to limit the invention to the precise form  
16 disclosed. Modifications and variations of the embodiments are possible in light of the above  
17 disclosure or such may be acquired through practice of the invention. The embodiments illustrated  
18 were chosen in order to explain the principles of the invention and its practical application to enable  
19 one skilled in the art to utilize the invention in various embodiments and with various modifications  
20 as are suited to the particular use contemplated. It is intended that the scope of the invention be  
21 defined by the claims appended hereto, and by their equivalents.